

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

11040 U.S. PTO
09/934797
08/22/01



Applicants: Raymond J. GORTE
John M. VOHS
Radu CRACIUN

Title: DIRECT OXIDATION METHOD FOR
GENERATING ELECTRICITY

Express Mail No.: EL815472706US

Date of Deposit: 22 August 2001

FIRST INFORMATION DISCLOSURE STATEMENT

Box PATENT APPLICATION
Assistant Commissioner for Patents
Washington, D.C. 20231

Dear Sir:

In accordance with Rule 1.56, the references listed on the attached Form PTO-1449 were cited during prosecution of the patent application listed below, which is relied upon for an earlier filing date under 35 U.S.C. 120:

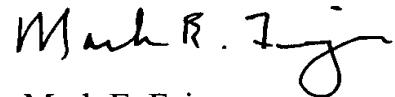
Title: METHOD FOR SOLID OXIDE FUEL CELL
ANODE PREPARATION
Applicants: Raymond J. GORTE et al.
Serial No.: 09/261,324
Filing Date: 03 March 1999
Attorney Docket No.: GRI-98-024

and are hereby brought to the attention of the Examiner as possibly being material to examination of the subject application.

Express Mail No.: EL815472706US

Copies of these references are not enclosed as they are contained in the file of the related parent application.

Respectfully submitted,



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FORM PTO-1449
(MODIFIED)U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE

ATTY. DOCKET NO.

GRI-00-023

SERIAL NO.

LIST OF PRIOR ART CITED BY APPLICANT
(Use several sheets if necessary)

APPLICANT(S)

Raymond J. GORTE et al.

FILING DATE

GROUP

110-0 U.S. PRO
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U.S. PATENT DOCUMENTS

| *EXAMINER INITIAL | | DOCUMENT NUMBER | DATE | NAME | CLASS | SUBCLASS | FILING DATE IF APPROPRIATE |
|-------------------|----|-----------------|---------|--------------------|-------|----------|----------------------------|
| | AA | 5,543,239 | 08/1996 | Virkar et al. | | | |
| | AB | 5,656,387 | 08/1997 | Barnett et al. | | | |
| | AC | 4,661,422 | 04/987 | Marianowski et al. | | | |
| | AD | 5,306,411 | 04/1994 | Mazanec et al. | | | |
| | AE | 5,676,806 | 10/1997 | Van Berkel et al. | | | |
| | AF | 5,731,097 | 04/1994 | Miyashita et al. | | | |
| | AG | | | | | | |
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FOREIGN PATENT DOCUMENTS

| | | DOCUMENT NUMBER | DATE | COUNTRY | CLASS | SUBCLASS | TRANSLATION | |
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| | | | | | | | YES | NO |
| | AL | 00/13791 | 03/2000 | PCT | | | | |
| | AM | 01 007475 | 01/1989 | Japan (Abstract) | | | | |
| | AN | 338 823 | 10/1989 | EPO | | | | |
| | AO | | | | | | | |
| | AP | | | | | | | |

OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

| | | |
|----|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AR | | K. Eguchi et al.: <i>Electrical properties of ceria-based oxides and their application to solid oxide fuel cells, Solid State Ionics</i> , 52, pp. 165-172, 1992. |
| | | |
| AS | | M. Mogensen et al.: <i>Physical Properties of Mixed Conductor Solid Oxide Fuel Cell Anodes of Doped CeO₂</i> , J. Electrochem. Soc., Vol. 141, No. 8, pp. 2122-2128, August 1994. |
| | | |
| AT | | E.S. Putna et al.: <i>Ceria-Based Anodes for the Direct Oxidation of Methane in Solid Oxide Fuel Cells</i> , Langmuir, Vol. 11, No. 12, pp. 4832-4837, 1995. |
| | | |

EXAMINER

DATE CONSIDERED

***EXAMINER:** Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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| AR | | R.T. Baker et al.: <i>Evaluation of perovskite anodes for the complete oxidation of dry methane in solid oxide fuel cells</i> , <u>Solid State Ionics</u> , 72, pp. 328-333, 1994. | | | | | |
| | | | | | | | |
| AS | | K. Asano et al.: <i>A Novel Solid Oxide Fuel Cell System Using the Partial Oxidation of Methane</i> , <u>J. Electrochem. Soc.</u> , Vol. 142, No. 10, pp. 3241-3245, October 1995. | | | | | |
| | | | | | | | |
| AT | | Y. Hiei et al.: <i>Partial oxidation of methane for internally reformed solid oxide fuel cell</i> , <u>Solid State Ionics</u> , Vol. 86-88, pp. 1267-1272, 1996. | | | | | |
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| AR | | N.M. Sammes et al.: <i>Synthesis and properties of dense nickel and cobalt zirconia cermet anodes for solid oxide fuel cells</i> , <i>J. Mat. Sci.</i> , 31, pp. 6069-6072, 1996. | | | | | |
| | | | | | | | |
| AS | | C.H. Bartholomew: <i>Carbon Deposition in Steam Reforming and Methanation</i> , <i>Catal. Rev.--Sci. Eng.</i> , 24 (1), pp. 67-112, 1982. | | | | | |
| | | | | | | | |
| AT | | T. Kawada et al: <i>Electrical properties of transition-metal-doped YSV</i> , <i>Solid State Ionics</i> , Vol. 53-56, pp. 418-425, 1992. | | | | | |
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OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

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|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AR | T. Tsai et al.: <i>Effect of Mixed-Conducting Interfacial Layers on Solid Oxide Fuel Cell Anode Performance</i> , <u>J. Electrochem. Soc</u> , Vol. 145, No. 5, pp. 1696-1701, May 1998. |
| | |
| AS | H. Itoh et al.: <i>Configurational and Electrical Behavior of Ni-YSZ Cermet with Novel Microstructure for Solid Oxide Fuel Cell Anodes</i> , <u>J. Electrochem. Soc</u> , Vol. 144, No. 2, pp. 641-646, February 1997. |
| | |
| AT | H. Itoh et al.: <i>Improved Microstructure of Ni-YSZ Cermet Anode for SOFC with a Long Term Stability</i> , <u>Denki Kagaku</u> , Vol. 64, No. 6, pp. 549-554, 1996. |
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OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

| | | | | | | | |
|----|--|------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|
| AR | | H. Alqahtany et al.: <i>Methane Steam Reforming over Fe Electrodes in a Solid Electrolyte Cell, Energy & Fuels</i> , 7, pp. 495-504, 1993. | | | | | |
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| 2 | 892 | 1 |
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Order of re-scan issued on